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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/747,928	12/27/2000	Byung-Young Ahn	3430-0140P	3449

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EXAMINER
TRAN, BINH X

ART UNIT	PAPER NUMBER
1765	7

DATE MAILED: 09/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/747,928	AHN, BYUNG-YOUNG	
	Examiner	Art Unit	
	Binh X Tran	1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 September 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) *1-6,22 and 23* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *7-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-23* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group II (claims 7-21) in Paper No. 7 is acknowledged. The traversal is on the ground(s) that there is no serious burden is presented to the examiner to consider all of the claims in a single application. This is not found persuasive because it certainly provides a serious burden on the examiner to do method (group II) as well as the apparatus claims (group I) in a single application.

Claims 1-6, 22-23 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 18 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In line 2 of claim 18, "the predetermined distance from the electrode plate sufficient enough to minimize..." (emphasis added) is subjective, vague and indefinite.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-
(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

5. Claims 17-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Shang et al. (US 6,177,023).

Shang discloses a method of processing a substrate comprising:

providing an electrode plate (support plate 20);

positioning a substrate (165) at a predetermined distance from the electrode plate (20) to obtain an intermediate structure (col. 6 lines 29-48, Fig 4 or col. 6 lines 1-17);

processing the intermediate structure (Fig 4 and col. 6 lines 49-67);

removing the substrate from the electrode plate (col. 8 lines 15-22).

Respect to claim 18-19, Shang teaches the step of positioned the substrate at the predetermined position from the electrode plate (20) by placing an intermediate material to minimize charge induce (col. 5 line 64 to col. 6 line 17, read on "at the predetermined distance from the electrode plate sufficient enough to minimize electrostatic attraction there between").

Respect to claim 20, Shang teaches the step of:

providing an electrode;

providing an intermediate material on the electrode (col. 6 lines 1-17);

providing a substrate on the intermediate material of the electrode to obtain an intermediate structure and processing the intermediate structure (col. 6 lines 28-48);

removing the substrate from the electrode (col. 8 lines 15-22).

Respect to claim 21, Shang teaches the step of removing is achieved by using a plurality of pins (171) formed on the electrode to push the substrate away from the electrode, while the intermediate material (i.e coating material) provide electrostatic protection between the substrate and the electrode (col. 8 lines 15-22).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 7-12, 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deguchi et al (US 5,665,167) in view of Collins et al. (US 5,874,3612) and further in view of Nakamura (US 6,096,572).

Deguchi
~~Shang~~ discloses a method comprising an apparatus having:

a process chamber (201) having a gas inlet (207), the gas inlet allowing a reactive gas into the process chamber (col. 7 lines 30-55);

a first electrode (202) arranged at a predetermined location in the process chamber;

a second electrode (203) in the chamber spaced apart from and opposite to the first electrode, having insulating film with a polyimide adhesive agent thereon (Note:

polyimide type adhesive agent read on "insulating tape"), a plurality of lift pins (228) received in a plurality of holes, the insulating adhesive material (213) being arranged between the plurality of lift pins (See Fig 4-5, col. 4 line 29 to col. 5);

a power source (221) for applying voltage to the second electrode;

arranging the substrate (205) on the second electrode (203);

dry etching the substrate (col. 7 lines 55-60);

separating the substrate from the second electrode (203) using the lift pins (228) (see fig 5).

Deguchi does not teach a power source for applying voltage to the first electrode (i.e. upper electrode). However Deguchi teaches a power source for applying voltages to the second electrode (lower electrode).

In a semiconductor method, Collins teaches using a power source for applying voltage to both electrodes (col. 5 lines 35-55). It would have been obvious to one having ordinary skill in the art, at the time of invention, to Deguchi view of having a power source applying voltages to both electrodes because it would produce a uniform high density plasma.

Both Deguchi and Collins do not explicitly use the term "array substrate" in their invention. Nakamura teaches the substrate can be array substrate. It would have been obvious to one having ordinary skill in the art, at the time of invention, to modify Deguchi and Collins in view of Nakamura by using array substrate. Deguchi/Collins is not particular about the kind of substrate in their invention. Therefore, any substrate including array substrate would produce an expected result.

Respect to claim 8, Deguchi teaches the process chamber is a vacuum chamber. Respect to claim 9, Deguchi teaches the polyimide type adhesive agent is used in the vacuum chamber (col. 8 lines 1-6). Thus the examiner interprets that Deguchi's polyimide adhesive in the vacuum chamber read on the limitation of "vacuum tape". Respect claim 10, Deguchi teaches the power source (221) generates RF power (col. 8 lines 17-23).

Respect to claim 11, Deguchi teaches a DC power source (90) for applying a DC voltage to the lower electrode (See col. 5 lines 25-32second electrode). Deguchi does not teach applying DC voltages to both electrodes. Collins teaches applying DC voltage to upper and lower electrode (Fig 1). It would have been obvious to one having ordinary skill in the art, at the time of invention, to modify Deguchi in view of Collins by applying DC voltages to both electrodes because it would produce a uniform high density plasma.

Respect to claims 12-14, Deguchi teaches that the dry-etching process is plasma and/or reactive ion etching.

8. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Deguchi Collins and Nakamura as applied to claim 7 above and further in view of Westwood (US 5,985,104).

Respect to claim 13, Deguchi does not teach that the dry etching is a ion beam milling etching. However Deguchi clearly teaches the dry etching process is a RIE. In a semiconductor process, Westwood teaches that RIE can be used instead of ion beam milling. It would have been obvious to one having ordinary skill in the art, at the time of

invention, to modify Deguchi/Collins/Nakamura in view of Westwood by using ion beam milling because equivalent and substitution of one for the other would produce an expected result.

9. Claims 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deguchi in view of Nakamura.

Deguchi teaches a method comprising:

providing a dry-etching apparatus having a first electrode and the second electrode (203) in a process chamber, the second electrode having a plurality of holes and lift pins (228), and an insulating adhesive material (213) (See Fig 4-5, col. 4 line 29 to col. 5);

arranging the substrate (205) on the second electrode (203);

separating the substrate from the second electrode (203) using the lift pins (228) (see fig 5).

Deguchi do not explicitly use the term "array substrate" in his invention. Nakamura teaches the substrate can be array substrate. It would have been obvious to one having ordinary skill in the art, at the time of invention, to modify Deguchi and Collins in view of Nakamura by using array substrate. Deguchi is not particular about the kind of substrate in their invention. Therefore, any substrate including array substrate would produce an expected result.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Binh X Tran whose telephone number is (703) 308-

1867. The examiner can normally be reached on Monday-Thursday and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin L Utech can be reached on (703) 308-3836. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Binh X. Tran
September 20, 2002

BENJAMIN L. UTECH
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